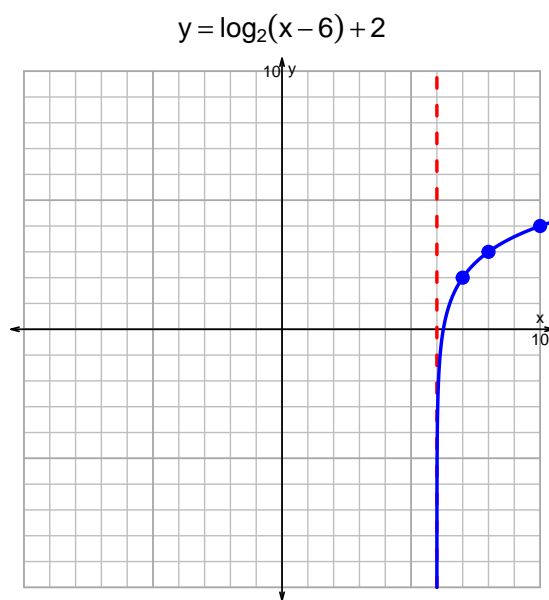
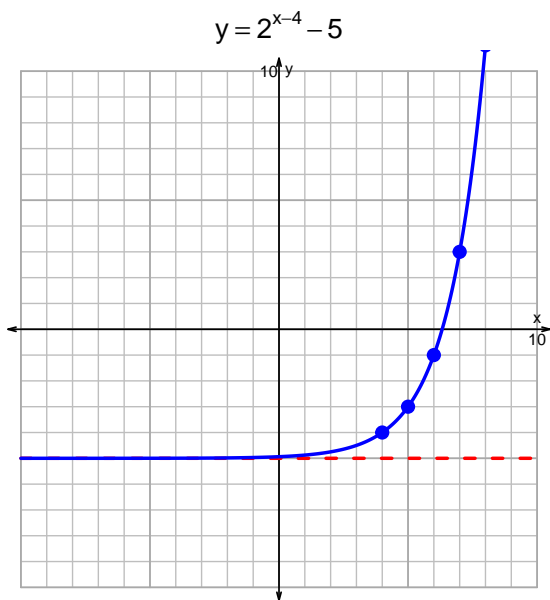


Name: _____

Date: _____

s18: EXP LOG (SLTN v317)

1. (10 pts) Graph $y = 2^{x-4} - 5$ and $y = \log_2(x - 6) + 2$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$23 = \left(\frac{5}{7}\right) \cdot 2^{4t/3}$$

Divide both sides by $\frac{5}{7}$.

$$\frac{23 \cdot 7}{5} = 2^{4t/3}$$

Take log, base 2, of both sides.

$$\log_2 \left(\frac{23 \cdot 7}{5} \right) = \frac{4t}{3}$$

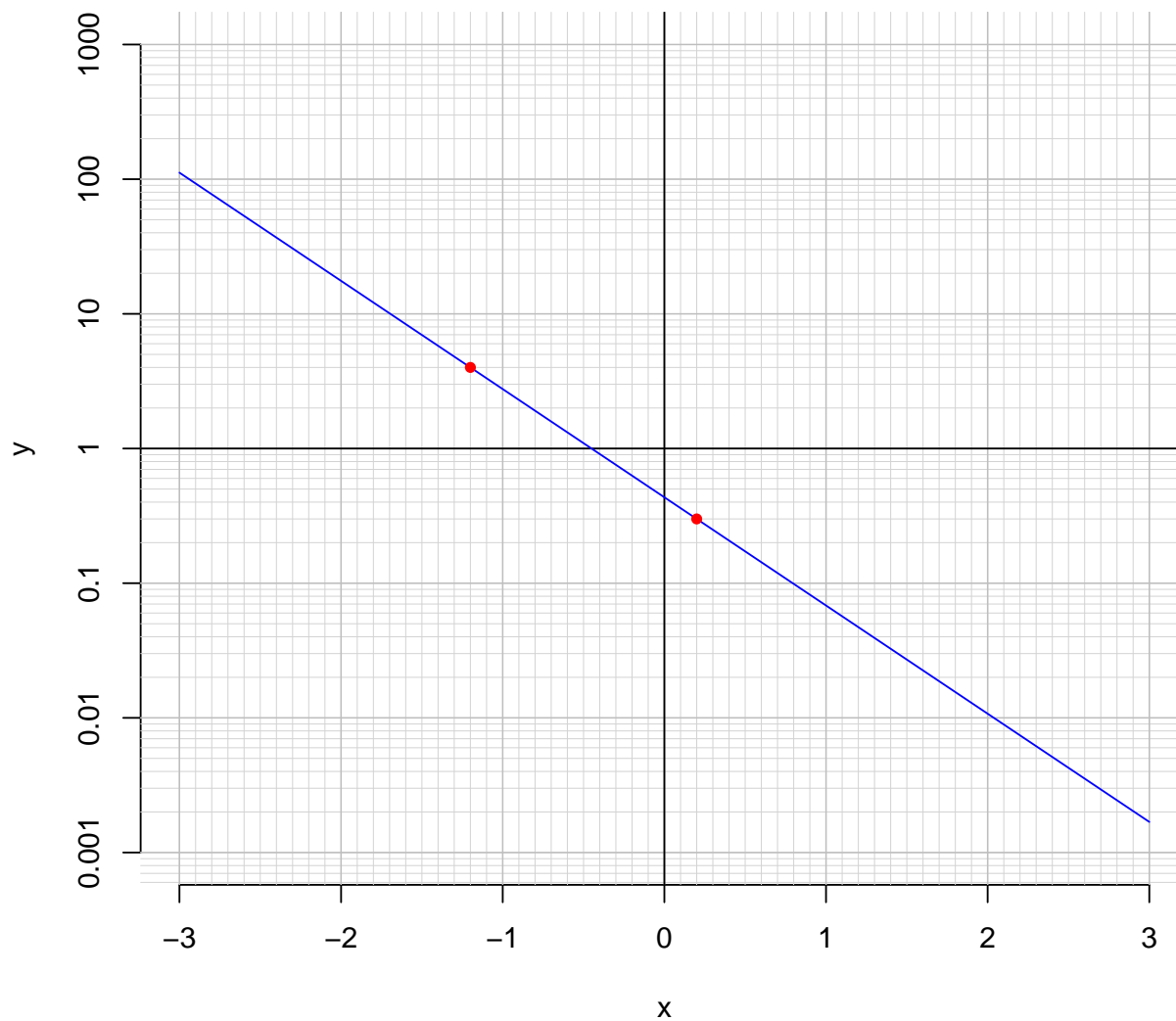
Divide both sides by $\frac{4}{3}$.

$$\frac{3}{4} \cdot \log_2 \left(\frac{23 \cdot 7}{5} \right) = t$$

Switch sides.

$$t = \frac{3}{4} \cdot \log_2 \left(\frac{23 \cdot 7}{5} \right)$$

3. (10 pts) An exponential function $f(x) = 0.434 \cdot e^{-1.85x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-1.2)$.

$$f(-1.2) = 4$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{1.85} \cdot \ln\left(\frac{x}{0.434}\right)$$

Using the plot above, evaluate $f^{-1}(0.3)$.

$$f^{-1}(0.3) = 0.2$$